

REMARKS

Favorable reconsideration of this application in view of the remarks to follow is respectfully requested. Since the present Response raises no new issues, and in any event, places the application in better condition for consideration on appeal, entry thereof is respectfully requested under the provisions of 37 C.F.R. §1.116.

Claims 28 - 33 stand rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent No. 5,970,362 to Lyons, et al. ("Lyons, et al."). It is the Examiner's position, referring to page 2 of the present Office Action, that Lyons, et al. disclose the limitations of, "trench isolation regions formed within a substrate (24, Fig. 2D) electrically isolating adjacent active device regions from each other, said planarized trench isolation regions containing a conformal oxide liner (25, Fig. 2F) confined within and along sidewalls of said planarized trench isolation region, wherein said conformal oxide liner has rounded corners 38 between the top surfaces of the substrate and a trench dielectric filling (26, Fig. 2G) said trench (col. 5, lns. 1-26)".

It is axiomatic that anticipation under §102 requires the prior art reference to disclose every element to which it is applied. In re King, 801 F.2d 1324, 1326, 231 USPQ 36, 138 (Fed Cir, 1986). Thus, there must be no differences between the subject matter of the claim and the disclosure of the prior art reference. Stated another way, the reference must contain within its four corners adequate direction to practice the invention as claimed. The corollary of the rule is equally applicable: absence from the applied reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

Applicants submit that the claims of the present application are not anticipated by the disclosure of Lyons, et al., since the applied reference does not disclose applicants' claimed structure. Specifically, Lyons, et al. do not teach a semiconductor device comprising a planarized trench isolation region 116 containing a conformal oxide liner 112 confined within and along sidewalls of said planarized trench isolation regions 116, where said *conformal oxide liner 112 has rounded corners 115* between top surfaces of said substrate 100 and a trench dielectric 114 filling the planarized trench isolation region, as recited in previously amended Claim 28.

Applicants' claimed structure, as depicted in Fig. 2E, includes a trench isolation region where a trench 110 is formed in a substrate 100 and is conformally lined with an oxide layer 112 that terminates *with rounded corners 115* at the junction between the top surfaces of the substrate 100 and the trench dielectric 114. Referring to page 12 lines 10-15, applicants disclose that divot formation is substantially phased away because the conformal oxide liner 112 etches at a slower rate than the trench dielectric material 114. Applicants further disclose that the "differential in etch rate prevents the formation of a divot at the STI/substrate corner" and that "instead rounded corners 115 are formed in the present invention, as shown in Fig. 2E."

Lyons, et al. do not anticipate applicants' claimed structure because Lyons, et al. fail to teach a conformal oxide liner having rounded corners, as recited in Claim 28. Lyons, et al. produce a planar shallow trench isolation structure by forming a trench in a substrate, depositing a conformal oxide layer 25 within the trench, and filling the trench with an insulating material 24. Referring to Column 3, lines 25-30, Lyons, et al. disclose where the insulating material 24 filling the trench and the conformal oxide layer 25 are both silicon dioxide. "Adverting to FIG. 2H, subsequent to trench filling, planarization is effected, as by

CMP, to polish the insulating material 26 until the main surface 21a of the substrate 21 and the uppermost surface 26a of the insulating material 26 are substantially coplanar.” *See* Column 5, lines 20-25.” Still referring to FIG. 2H, the planarized conformal oxide layer 25 disclosed in Lyons, et al. does not have rounded corners.

It is the Examiner’s position that, “it would be inherent that the liner material would form rounded corners because the liner and filler material are the same, therefore the CMP process would naturally yield rounded corners.” To establish inherency the alleged limitation must be necessarily present so that one of ordinary skill would recognize its presence. *See Crown Operations International, LTD v. Solutia Inc.*, 289 F.3d 1367, 1377, 62 USPQ2d 1917 (Fed. Cir. 2002). Applicants respectfully disagree and submit that the conformal oxide layer 25 produced using the method disclosed in Lyons, et al. would not have rounded corners because Lyons, et al. disclose where the conformal oxide layer 25 and the insulating fill 24 are the same material. Applicants, as discussed above, disclose where the reduction in divot formation and the formation of rounded conformal oxide liner corners 115 are the result of an etch differential between the conformal oxide liner 112 and the trench dielectric 114. Therefore, since Lyons, et al. disclose where the conformal oxide liner 25 and the insulating fill 24 are the same material Lyons, et al. do not disclose the required etch differential for producing a conformal oxide liner having rounded corners. Lyons, et al. do not inherently form a conformal oxide liner having rounded corners.

The forgoing remarks clearly demonstrate that the applied reference does not teach each and every aspect of the claimed invention as required by King and Kloster Speedsteel; et al., therefore, the claims of the present application are not anticipated by the disclosure of Peidous, et al. Applicants respectfully submit that the instant §102 rejection has been obviated and withdrawal thereof is respectfully requested.

Wherefore reconsideration and allowance of the claims of the present application are respectfully requested.

In summary, applicants respectfully submit that this application is in condition for allowance. Accordingly, applicants respectfully request that this application be allowed and a Notice of Allowance be issued. If the Examiner believes that a telephone conference with the applicants' representatives would be advantageous to the disposition of this case, the applicants request that the Examiner telephone the undersigned.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Leslie S. Szivos', with a long horizontal flourish extending to the right.

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